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ABSTRACT

(Revised)

This invention describes a method of rapid detection of micro-colonies of microorganisms by changing their shape from a regular semi-sphere to a long and thin cylinder. Cells are trapped by filtration in long (diameter/length= $1/10 - 1/100$), cylindrical, parallel, micro-channels that are open from both sides, and attached to a filter from one side. A micro-channel plate houses a multiplicity of micro-channels (diameter of each channel = $1 - 20 \mu\text{m}$, and length $100 - 1000 \mu\text{m}$). The micro-channel plate with cells trapped on the surface of the filter is attached to a nutrient media agar block. Cells produce micro-colonies of a long and thin shape according the shape of the micro-channel. The growth of microorganisms in the micro-channels permits a change in the number of cells to accomplish light absorbance. Fewer cells need a shorter time to reproduce. Thus detection and counting of cells can be accomplished in a rapid fashion. The light absorbance can be enhanced by additional coloration of micro-colonies by cell dyes or artificial chromogenic or fluorogenic substrates.